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SBD

1. (amended) A nucleic acid mimic in admixture with at least one target molecule selected from the group consisting of nucleic acids, transcription factors, carbohydrates and proteins, said mimic comprising a non-naturally occurring backbone structure to which are appended a plurality of heterocyclic bases,

at least one of said bases being substituted with at least one sterically bulky substituent at a position one, two or three atoms removed from the position of attachment of said base to the backbone.

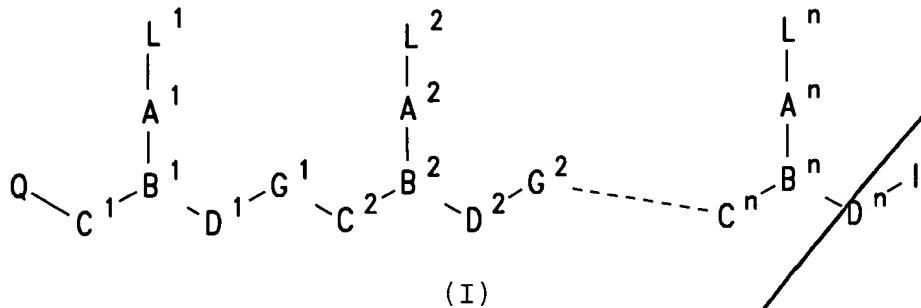
2. (amended) The nucleic acid mimic according to claim 1 wherein said sterically bulky substituent is  $-R'$ ,  $-OR'$ ,  $-SR'$ ,  $-N(R')_2$ ,  $-C(R')_3$ ,  $-C(=X)(R')$ ,  $-C(=X)(-Y-R')$  or  $S(=O)_{1-2}(-Y-R')$  wherein:

X is O, S or NH;

Y is O, S or NH; and

[wherein] R' comprises at least 3 atoms and is H,  $C_1-C_{50}$ -alkyl,  $C_2-C_{50}$ -alkenyl,  $C_2-C_{50}$ -alkynyl,  $C_7-C_{50}$ -alkyl-aryl,  $C_6-C_{50}$ -aryl,  $C_{10}-C_{50}$ -naphthyl,  $C_{12}-C_{50}$ -biphenyl,  $C_7-C_{50}$ -aryl-alkyl, pyridyl, imidazolyl, pyrimidinyl, pyridazinyl, quinolyl, acridinyl, pyrrolyl, furanyl, thienyl, isoxazolyl, oxazolyl, thiazolyl and biotinyl, wherein R' can be substituted one or more times by  $-NO$ ,  $-NO_2$ ,  $-SO_3^-$ ,  $-CN$ ,  $-OH$ ,  $-NH_2$ ,  $-SH$ ,  $-PO_3^{2-}$ ,  $-COOH$ ,  $-F$ ,  $-Cl$ ,  $-Br$  and  $-I$ .

-11. The nucleic acid mimic according to claim 1 having formula (I):



wherein:

n is at least 2,

each of L<sup>1</sup>-L<sup>n</sup> is independently selected from the group consisting of hydrogen, hydroxy, (C<sub>1</sub>-C<sub>6</sub>)<sub>4</sub> alkanoyl, naturally occurring nucleobases, non-naturally occurring nucleobases, aromatic moieties, DNA intercalators, nucleobase-binding groups, heterocyclic moieties, and reporter ligands, at least one of L<sup>1</sup>-L<sup>n</sup> being said base substituted with at least one sterically bulky substituent;

each of C<sup>1</sup>-C<sup>n</sup> is (CR<sup>6</sup>R<sup>7</sup>)<sub>y</sub> where R<sup>6</sup> is hydrogen and R<sup>7</sup> is selected from the group consisting of the side chains of naturally occurring alpha amino acids, or R<sup>6</sup> and R<sup>7</sup> are independently selected from the group consisting of hydrogen, (C<sub>2</sub>-C<sub>6</sub>) alkyl, aryl, aralkyl, heteroaryl, hydroxy, (C<sub>1</sub>-C<sub>6</sub>) alkoxy, (C<sub>1</sub>-C<sub>6</sub>) alkylthio, NR<sup>3</sup>R<sup>4</sup> and SR<sup>5</sup>, where R<sup>3</sup> and R<sup>4</sup> are as defined above, and R<sup>5</sup> is hydrogen, (C<sub>1</sub>-C<sub>6</sub>) alkyl, hydroxy-, alkoxy-, or alkylthio- substituted (C<sub>1</sub>-C<sub>6</sub>) alkyl, or R<sup>6</sup> and R<sup>7</sup> taken together complete an alicyclic or heterocyclic system;

each of  $D^1-D^n$  is  $(CR^6R^7)_z$  where  $R^6$  and  $R^7$  are as defined above;

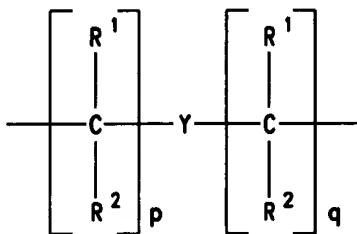
each of  $y$  and  $z$  is zero or an integer from 1 to 10, the sum  $y + z$  being greater than 2 but not more than 10;

each of  $G^1-G^{n-1}$  is  $-NR^3CO-$ ,  $-NR^3CS-$ ,  $-NR^3SO-$  or  $-NR^3SO_2-$ , in either orientation, where  $R^3$  is as defined above;

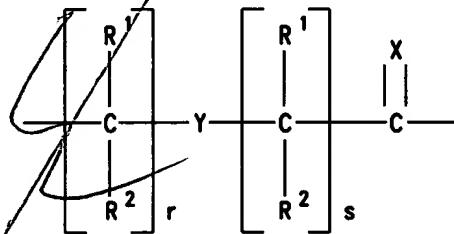
each pair of  $A^1-A^n$  and  $B^1-B^n$  are selected such that:

(a)  $A$  is a group of formula (IIa), (IIb) or (IIc) and  $B$  is  $N$  or  $R^3N^+$ ; or

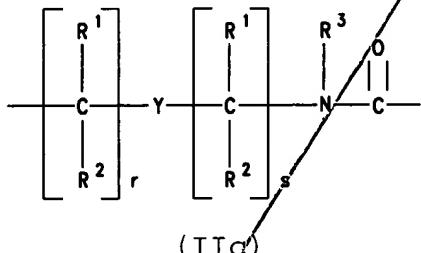
(b)  $A$  is a group of formula (IID) and  $B$  is  $CH$ ;



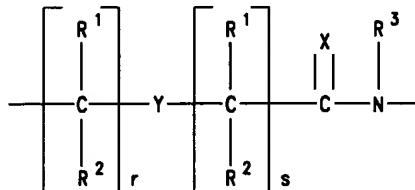
(IIa)



(IIb)



(IIc)



(IID)

where:

$X$  is  $O$ ,  $S$ ,  $Se$ ,  $NR^3$ ,  $CH_2$  or  $C(CH_3)_2$ ;

$Y$  is a single bond,  $O$ ,  $S$  or  $NR^4$ ;

each of  $p$  and  $q$  is zero or an integer from 1 to 5;

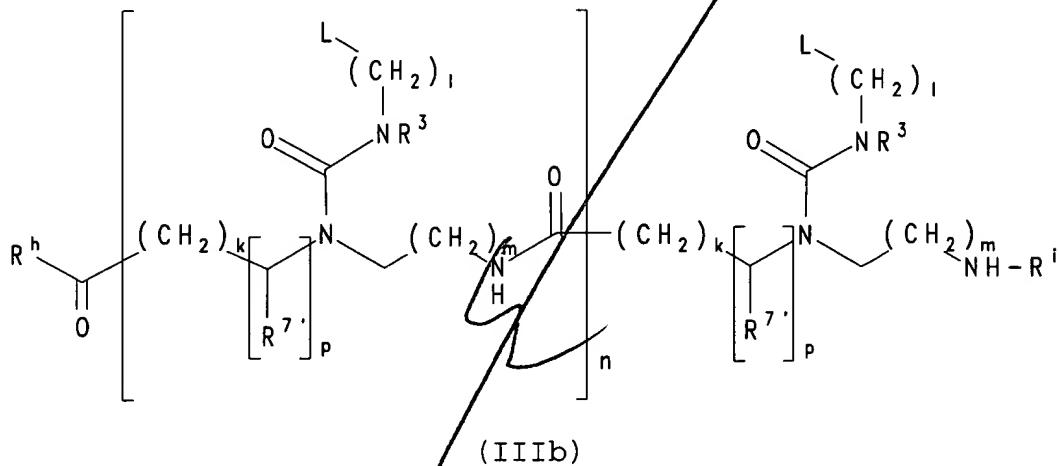
each of  $r$  and  $s$  is zero or an integer from 1 to 5;

p is zero or 1;

$R^h$  is OH, NH<sub>2</sub> or -NHLysNH<sub>2</sub>; and

$R^i$  is H or COCH<sub>3</sub>.

21. The nucleic acid mimic according to claim 11 having formula (IIIb) :



wherein:

each L is independently selected from the group consisting of hydrogen, phenyl, heterocyclic base moieties, including those substituted with a sterically bulky group or groups, naturally occurring nucleobases, and non-naturally occurring nucleobases, at least one L being said base substituted with at least one sterically bulky substituent;

each  $R^7'$  is independently selected from the group consisting of hydrogen and the side chains of naturally occurring alpha amino acids;

n is an integer from 1 to 60;